REMARKS

Applicant appreciates the Examiner's thorough consideration provided the present application. Claims 1-14, 16, 18 and 19 are now present in the application. Claims 1 and 8 have been amended. Claims 15 and 17 have been cancelled. Claims 1 and 8 are independent. Reconsideration of this application, as amended, is respectfully requested.

Interview With The Examiner

An interview was conducted with the Examiner in charge of the above-identified application on January 21, 2010. Applicants greatly appreciate the courtesy shown by the Examiner during the interview.

During the interview with the Examiner, Applicant's representative presented argument with regard to the rejection under 35 U.S.C. § 103(a). The substance of the interview can be seen in the Interview Summary dated January 28, 2010. However, no agreement has been reached during the interview.

Claim Rejections Under 35 U.S.C. §§ 102 & 103

Claims 1, 3-5, 8 and 11-13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Samy, U.S. Patent Application Publication No. 2003/0079871, in view of Matsushita, U.S. Patent No. 6,926,075, and further in view of Derosier, U.S. Patent No. 6,889,759. Claims 2 and 9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Samy in view of Matsushita and Derosier, and further in view of Harrison, U.S. Patent No. 6,260,830. Claims 6, 7, 10 and 14-16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Samy in view of Matsushita and Derosier, and further in view of Dalzell, U.S. Patent No. 2,281,754.

Claim 19 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Samy in view of Matsushita, Derosier and Harrison, and further in view of Lefevre, U.S. Patent No. 4,581,183. These rejections are respectfully traversed.

Complete discussions of the Examiner's rejections are set forth in the Office Action, and are not being repeated here.

In light of the foregoing amendments to the claims, Applicant respectfully submits that these rejections have been obviated and/or rendered moot. Without conceding to the propriety of the Examiner's rejections, but merely to timely advance the prosecution of the application, as the Examiner will note, independent claims 1 and 8 have been amended.

Independent claim 1 has been amended to recite a combination of elements including "each of the protuberances has a surface profile extending over the surface of the protuberance for promoting break-up of laminar boundary layers, and the surface profile consists of spherical or ellipsoid segments approximately evenly spaced over the entire surface of the surface of the protuberance for promoting uniform break-up of laminar boundary layers."

Independent claim 8 has been amended to recite a combination of elements including " each protuberance has a surface profile extending over the surface of the protuberance for promoting break-up of laminar boundary layers, and the surface profile consists of spherical or ellipsoid segments approximately evenly spaced over the entire surface of the surface of the protuberance for promoting uniform break-up of laminar boundary layers."

Support for the amendments to claims 1 and 8 can be found in FIG. 3 as originally filed. Applicant respectfully submits that the combinations of elements set forth in claims 1 and 8 are not disclosed or suggested by the references relied on by the Examiner.

As recited in claims 1 and 8, each protuberance has a surface profile extending over the surface of the protuberance, and the surface profile consisting of spherical or ellipsoid segments approximately evenly spaced over the entire surface of the surface of the protuberance for promoting uniform break-up of laminar boundary layers.

The Examiner has correctly acknowledged that Samy fails to teach the surface profile of the protuberance as recited in previously presented claims 1 and 8. Therefore, Samy also fails to teach the above-noted claimed features of the surface profile of the protuberance as recited in amended claims 1 and 8.

Matsushima also fails to cure the deficiencies of Samy. In particular, Matsushima simply discloses providing the line-shaped micro-fins (referred to by the Examiner as the surface profile) on the heat-transfer surface element 3 (referred to by the Examiner as the protuberance). In addition, the pattern of the micro-fins is unevenly spaced over the entire surface of the heat-transfer surface element 3. More specifically, as shown in FIG. 1 of Matsushima, the distance/space between two immediately adjacent micro-fins is gradually increased from top to bottom of the heat-transfer surface element 3 (not to mention the fact that the top of the heat-transfer surface element 3 is flat without any micro-fins). Therefore, the micro-fins of Matsushima are unevenly spaced and the break-up of laminar boundary layers is non-uniform.

In addition, the Examiner during the interview stated that Derosier is only relied on for its teaching of the shape of the surface profile, and not for its teaching of the location of the surface profile. Even if the shape of Matsushima's micro-fins were modified to become spherical in view of Derosier as the Examiner suggested, the distance/space between two immediately adjacent spherical micro-fins is still gradually increased from top to bottom of the heat-transfer

surface element 3. Therefore, the modified spherical micro-fins are still unevenly spaced and the break-up of laminar boundary layers is still non-uniform.

Furthermore, Derosier discloses that the dimples 58 and 60 are only located at the peaks and valleys of the corrugation 30. Therefore, the break-up of laminar boundary layers in Derosier is also non-uniform.

Moreover, although the Examiner stated that Derosier is not relied on for its teaching of the location of the surface profile (i.e., the dimples 58 and 60), the location of Derosier's elements 58 and 60 of Derosier and the location of Matsushima's micro-fins are still critical to determine whether one skilled in the art would be motivated to modify Matsushima's micro-fins in view of Derosier's dimples 58 and 60. In particular, Matsushima specifically discloses that the top of the heat-transfer surface element 3 is flat without any micro-fins. On the other hand, Derosier specifically discloses that the dimples 58 and 60 are only located at the peaks and valleys of the corrugation 30. Since the thermal performance of the dimples/micro fins may be significantly changed based on the location and shape of the dimples/micro fins, one skilled in the art therefore would not be motivated to modify the shape of Matsushima's micro-fins in view of the shape of Derosier's dimples 58 and 60 because of their different locations.

With regard to the Examiner's reliance on the other second references, these references have only been relied on for their teachings related to some dependent claims. These references also fail to disclose the above combinations of elements as set forth in amended independent claims 1 and 8. Accordingly, these references fail to cure the deficiencies of Samy.

Accordingly, none of the utilized references individually or in combination teach or suggest the limitations of amended independent claims 1 and 8. Therefore, Applicant

respectfully submits that amended independent claims 1 and 8 clearly define over the teachings of the utilized references.

In addition, claims 2-7, 9-14, 16, 18 and 19 depend, either directly or indirectly, from independent claims 1 and 8, and are therefore allowable based on their respective dependence from independent claims 1 and 8, which are believed to be allowable.

In view of the above remarks, Applicant respectfully submits that claims 1-14, 16, 18 and 19 clearly define the present invention over the references relied on by the Examiner. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103 are respectfully requested.

CONCLUSION

All the stated grounds of rejection have been properly traversed and/or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider all presently pending rejections and that they be withdrawn.

It is believed that a full and complete response has been made to the Office Action, and that as such, the Examiner is respectfully requested to send the application to Issue.

In the event there are any matters remaining in this application, the Examiner is invited to contact Cheng-Kang (Greg) Hsu, Registration No. 61,007 at (703) 205-8000 in the Washington, D.C. area.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

By #61057 Cheng-Kang Hsu Reg. No. 61,007

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